3.3 Exam Review

I. Know How Genomes are Regulated

* Bacteria – Operons
  + Negative vs. Positive regulation
  + Repressible vs. Inducible
  + Repressor vs. Corepressor
  + Regulatory gene vs. Structural gene
* Eukaryotes
  + Chromatin Modifications –DNA/Histones
  + Enhancers, Transcription Factors, Chromatin Loops
  + Alternative Splicing, mRNA degradation, 5’cap, poly-A tail
  + Proteasome regulation
  + ncRNA, miRNA, siRNA
* Similarities & differences in gene regulation among eukaryotes & prokaryotes.

III. Know the steps of initiation, transfer and reception of the information for:

* A general signal transduction pathway
  + Reception
    - Intracellular
    - Membrane: G-Linked vs. Tyrosine Kinase
  + Transduction
    - Second Messengers: cAMP, Calcium, IP3
    - Phosphorylation Cascades
  + Response
    - Activate gene expression (nuclear response)
    - Activate a non-nuclear cellular response (metabolic)
* Important terms & functions to know: Adenylyl Cyclase, cAMP, Phosphatase, Kinase
* Nerve cell communication pathway
  + Neuron Structure
  + Action Potential Mechanism